

<p>2004-554612/54 A14 B07 D21 F06 G02 BADI 2002.12.30 (B82 A96 A97 D18 F09)</p> <p>BASF AG *DE 10261750-A1 2002.12.30 2002-1061750(+2002DE-1061750) (2004.07.15) C08F 220/52, A61K 7/00, C08F 226/00, A61K 7/11</p> <p>New ampholytic copolymers of unsaturated anionic, cationic and amide monomers, especially useful in cosmetic or pharmaceutical compositions, e.g. as hair fixing or conditioning agents or in coatings C2004-203126</p>	<p>A(4-D1, 10-B1, 12-V1, 12-V4) B(14-N17, 14-R2) D(7-B, 8-B2, 8-B3, 8-B4, 8-B5, 8-B9) F(3-E1, 5-A6B) G(2-A5) .2</p> <p>group(s) and amide(s) of formula R¹-CO-NR²R³ (III). One of R¹ - R³ = -C(R⁴)=CH₂ and the remainder = H, alkyl, cycloalkyl, heterocycloalkyl, aryl or heteroaryl; or R¹ + R² = group completing a 5-8 membered lactam; or NR²R³ = 5-7 membered heterocycle; R⁴ = H or 1-4C alkyl.</p> <p>Provided that R¹ - R³ together have not more than 8C. An INDEPENDENT CLAIM is included for new polyelectrolyte complexes (B), comprising at least one copolymer (A) and at least one other polyelectrolyte.</p>
<p>NOVELTY New ampholytic copolymers (A) are obtained by radical copolymerization of the following α,β-ethylenically unsaturated monomers: compound(s) (I) containing anionogenic and/or anionic group(s), compound(s) (II) containing cationogenic and/or cationic group(s) and amide(s) (III).</p> <p>DETAILED DESCRIPTION New ampholytic copolymers (A) are obtained by radical copolymerization of the following α,β-ethylenically unsaturated monomers: compound(s) (I) containing anionogenic and/or anionic group(s), compound(s) (II) containing cationogenic and/or cationic</p>	<p>USE The use of (A) or (B) is claimed: (1) in hair cleansing, skin care or protection, nail care, decorative cosmetic or hair treatment compositions (especially hair fixing and/or conditioning compositions, particularly in the form of a hair gel, shampoo, fixing foam, lotion, spray or foam); (2) as a pharmaceutical auxiliary, especially as or in coatings for solid drug formulations;</p> <p> DE 10261750-A+</p>

<p>(3) for modifying rheological properties; (4) as surfactants; or (5) as or in coatings in the textile, paper, printing and leather industries. Cosmetic or pharmaceutical compositions containing (A) or (B) are also claimed.</p> <p><u>ADVANTAGE</u> (A) can provide a broad spectrum of beneficial actions when used as sole additive in compositions (especially cosmetic or pharmaceutical compositions), e.g. in forming non-sticky, smooth films or providing fixing or gelling action. (A) are compatible with most other polyelectrolytes.</p> <p><u>ADMINISTRATION</u> Claimed pharmaceutical or cosmetic compositions containing (A) or (B) contain a carrier (specifically one or more of water, water-miscible organic solvents (preferably 1-4C alkanols), oils, fats, esters of 6-230C monocarboxylic acids with mono-, di- or trihydric alcohols, fatty acids and/or fatty alcohols); optionally contain one or more of cosmetic active agents, emulsifiers, surfactants, preservatives, perfume oils, thickeners, hair polymers, hair or skin conditioners, graft polymers, water-soluble or -dispersible silicone-containing polymers,</p>	<p>light protectants, bleaching agents, gel formers, care agents, colorants, toners, tanning agents, dyes, pigments, consistency modifiers, moisturizers, refatting agents, collagen, protein hydrolyzates, lipids, antioxidants, antifoams, antistatic agents, emollients and/or plasticizers; and are preferably in the form of a gel, foam, spray, ointment, cream, emulsion, suspension, lotion, milk or paste.</p> <p><u>EXAMPLE</u> A copolymer (A') was prepared by solution polymerization using a monomer mixture (a) of 300 g vinyl pyrrolidone, 1200 g of 15% aqueous methacrylamide solution, 95 g diallyl dimethylammonium chloride, 42 g dimethylaminopropyl-methacrylamide and 21 g methacrylic acid, an initiator solution (b) of 6 g Wako V 50 (RTM; 2,2'-azo-bis-(2-amidinopropane) dihydrochloride) in 123 g water and an initiator solution (c) of 4 g Wako V 50 (RTM) in 82 g water. A mixture of 166 g (a), 12.9 g (b) and 137 g water was heated to 65 °C under stirring. After the start of polymerization (shown by an increase in viscosity), the remainder of (a) was added over 3 hours and the remainder of (b) over 4 hours, the temperature being increased to 68 °C. The mixture was stirred for 2 hours at 70 °C, treated with (c) over 30 minutes at 70 °C, post-polymerized for 2 hours at 80 °C and</p>
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2004-554612/54	<p>treated with steam for 2 hours to give a 30% solution of (A'). The solution was stabilized by adding 100 ppm Euxyl K100 (RTM; 5-chloro-2-methyl-3(2H)-isothiazolone. 2-methyl-3(2H)-isothiazolone and benzyl alcohol.</p> <p>Powdered (A') could be obtained by spray-drying or lyophilization. A fluid hair gel comprising 5.3% (A') (30% aqueous solution), 25.0% Natrosol 250 L (RTM; hydroxyethyl cellulose; 2% aqueous solution), 25.0% C-Dry MD 1915 (RTM; degraded starch; 10% aqueous solution) and distilled water (plus preservative, soluble ethoxylated silicone and perfume as required) to 100% was prepared by prolonged homogenization at room temperature.</p> <p>TECHNOLOGY FOCUS</p> <p>Polymers - Preferred Anionic Monomers: (I) are monoethylenically unsaturated carboxylic, sulfonic and/or phosphonic acids, specifically (meth)acrylic, ethacrylic, α-chloroacrylic, crotonic, maleic, fumaric, itaconic, citraconic, mesaconic, glutaric or aconitic acid, maleic anhydride or their mixtures, especially (meth)acrylic acid or a mixture containing (meth)acrylic acid.</p> <p>Preferred Cationic Monomers: (II) are esters of unsaturated mono- or</p>	<p>dicarboxylic acids with aminoalcohols (or their N-alkyl or N,N-dialkyl derivatives); amides of unsaturated mono- or dicarboxylic acids with diamines having at least one primary or secondary amino group; N,N-diallylamine; N,N-diallyl-N-alkylamines or their derivatives; vinyl- or allyl-substituted N-heterocycles; or vinyl- or allyl-substituted heteroaromatic compounds. In particular (II) is one or more of N,N-dimethylaminoethyl (meth)acrylate, N,N-dimethylaminopropyl (meth)acrylate and vinyl-imidazole.</p> <p>Preferred Amide Monomers: (III) are primary amides of unsaturated monocarboxylic acids, N-vinyl-amides of saturated monocarboxylic acids, N-vinyl-lactams or unsaturated monocarboxylic acid N-alkylamides or N,N-dialkylamides, especially one or more of (meth)acrylamide, N-vinyl-pyrrolidone, N-vinyl-caprolactam, N-vinyl-formamide and N-vinyl-acetamide.</p> <p>Preferred Components: (A) optionally also contains units derived from further monomers (IV), selected from: esters of unsaturated mono- or dicarboxylic acids with 1-30C alkanols or alkanediols; amides of unsaturated mono- or dicarboxylic acids with 2-30C aminoalcohols containing primary or secondary amino groups; unsaturated</p>
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<p>monocarboxylic acid N-alkylamides or N,N-dialkylamides containing more than 8C in addition to the carbonyl C; vinyl or allyl esters of 1-30C monocarboxylic acids; vinyl ethers; vinyl aromatics; vinyl or vinylidene halides; 1-8C monoolefins; non-aromatic hydrocarbons with at least two conjugated double bonds; and/or siloxane macromonomers.</p> <p>(A) are optionally obtained by polymerization in presence of one or more additives (V) selected from polyether compounds (specifically polyalkylene oxides and/or polyalkylene oxide-containing silicone derivatives), polymers having at least 50 wt. % vinyl alcohol repeating agents and/or cellulose or starch (or derivatives). (A) optionally also contains crosslinking units derived from monomer(s) (VI) having at least two double bonds.</p> <p>Preferred Polymers: (A) is obtained by radical copolymerization of 0.1-25 wt. % (I), 0.1-40 wt. % (II), 40-99.8 wt. % (III), 0-10 wt. % (IV) and 0-10 wt. % (VI), optionally in presence of up to 25 wt. % (V). In particular (A) is obtained from 0.1-10 (or 5-20) wt. % (meth)acrylic acid as (I), 1-20 (or 10-30) wt. % N,N-dimethylaminopropyl (meth)acrylate and vinyl-imidazole as (II), 70-98.9 (or 50-85) wt. % (meth)acrylamide, N-vinyl-pyrrolidone, N-vinyl-caprolactam and/or N-vinyl-formamide as (III), optionally together with 0.05-1 wt. % (VI) and/or 1-10 wt. % ester(s) of an unsaturated mono- or dicarboxylic</p>	<p>acid with a 1-30C alkanols (preferably stearyl (meth)acrylate) as (VI) and optionally in presence of up to 10 wt. % (V).</p> <p>Preparation: (A) are prepared by conventional radical polymerization procedures, preferably solution or precipitation polymerization.</p> <p>(27pp2400DwgNo.0/0)</p>
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